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BRIEFS

MEDICALS UNCHANGED. Objections from the medical community have prompted FAA to withdraw a notice of proposed rulemaking that would have reduced the frequency of required medical examinations for student and private pilots. Physicians were concerned that extending the interval between third class examinations up to five years (depending upon the pilot's age) would downgrade the importance of health in flight safety. The American Medical Association is currently reviewing airman medical standards and certification practices, and FAA will take any future action with AMA recommendations in mind.

FLOPPIES OFFER. Last month's "Briefs" included an offer of free access to an industry-wide avionics products database, for anyone who sent in appropriate blank diskettes compatible with IBM's MS-DOS RBASE 400 Database Management System. The issuing office (FAA, APO-220, 800 Independence Ave. S.W., Washington, D.C. 20591) advises that "appropriate" here means three blank, double-side, double-density floppy diskettes.

TESTING STANDARDS. A "Commercial Pilot Practical Test Standards" is replacing the Commercial Pilot Flight Test Guide and will become mandatory for testing applicants after 8/31/86. A new checklist spells out each maneuver a commercial pilot applicant must successfully complete. A subscription to this publication (with updates) is $21.00 domestic and $26.25 foreign. Order by title and number (FAA-S-8081-2) from the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C., 20402. Check, money order, VISA, or Mastercard are accepted.

SIMULATED INSTRUMENT FLIGHT in a civil aircraft requires the presence of a Safety Pilot on board. According to a recently enunciated policy statement by FAA, this means a pilot who has (1) a current appropriate medical certificate; and (2) the category, class, type and instrument ratings appropriate to the aircraft being flown and to the rules under which it is being operated. A Safety Pilot who does not intend to act as Pilot in Command need not comply with the currency requirements of FAR 61.57.

Nationwide Weather Data at Your Fingertips

U.S. pilots will find a little something extra in their Christmas stockings this year, courtesy of FAA. Instant aviation weather information for the entire country (except Alaska and Hawaii) is now available to anyone who has access to a touch tone telephone and the patience to become familiar with simple computer talk.

Following seven years of field-testing an automated Voice Response System prototype in the Washington, D.C. and Columbus, OH areas, FAA is about to introduce the system nationwide, 24 hours a day. Surface observations are available for all terminals having weather observing facilities, and forecasts are provided for metropolitan hubs as well as over 300 route segments. Hazardous weather warnings and winds aloft information will also be offered.

The new system is called Interim Voice Response System (IVRS). As indicated by the word interim, it is designed as a temporary measure for speeding up the flow of weather information, pending the revamping of flight service stations into automated hubs, where live specialists will be available to back up computerized data. (For a description of a forerunner of these hubs, see the article on Leesburg AFSS, page 16.)

IVRS is a computer network that continuously receives and stores aviation weather data from the Weather Message Switching Center in Kansas City. Any public, business or home telephone with standard 12-key signalling can be used to access IVRS. The service may also be obtained by coupling a 12 or 16-keyed tone signalling device to a rotary telephone. (Such devices are available from electronics supply houses, or may be leased from a local telephone company.) The phone call is local, if made within any of the 24 major metropolitan areas; otherwise it is a toll call.

Weather reporting stations and airports are uniquely identified by three-letter combinations (shown in the FAA Airport/Facility Directory) These Location Identifiers (LOCIDs) must be known, to obtain IVRS weather data. IVRS data will not always constitute an adequate preflight briefing, which may require contact with a FSS briefer. Flight plans may *not* be filed through IVRS.

Learning to converse with the synthesized voice of the computer is something like learning a far-out word game, called LOCID's and TWEB's. Many pilots find it stimulating and enjoyable. The "rules of the game" limit you to 15 total errors per session and a total elapsed time of 15 minutes—at which point you are politely but firmly terminated.

Following is a description of the six basic "weather products" of IVRS and the means by which the system is used. For a more detailed description and a complete listing of Location Identifiers and forecast route numbers, obtain a copy of the brochure, "A Pilot's Guide to IVRS," from any FAA Flight Standards District Office or FSS. Comments may be sent to the IVRS Project Office, FAA/APM-230, 800 Independence Ave. S.W., Washington, D.C. 20591.

WEATHER PRODUCTS

1 SEVERE WEATHER FORECAST ALERTS (AWW) inform pilots of forthcoming severe weather watches for severe thunderstorms or tornadoes. They are available when you enter a LOCID or TWEB route number for a state in which a Severe Weather Forecast Alert is in effect.

ISSUED: As necessary.

2 CONVECTIVE SIGMETS (WST) concern thunderstorms and related phenomena. They are available when you enter a LOCID or TWEB route number for a state in which a Convective SIGMET is in effect.

ISSUED: Hourly at 55 minutes past the hour and special bulletins as needed.

NOTE: Weather products 1 and 2 are collectively referred to as Selected Weather Warnings (SW). The system advises when Selected Weather Warnings exist for weather areas based on pilot input.

3 SURFACE OBSERVATIONS (SA) provide observed surface weather conditions for the LOCIDs entered.

ISSUED: Regular SAs hourly on the hour; automated SAs 20 and 40 minutes after the hour; and supplementary SAs as needed.

4 TERMINAL FORECASTS (FT) provide a forecast of weather conditions for the LOCIDs entered. A complete 24-hour FT consists of specific values for the first 18 hours and a categorical outlook for the last six hours.

ISSUED: Approximately 1000, 1500, and 2200 GMT. Routine delayed, amended, and corrected FTs are provided as necessary.

5 WINDS ALOFT FORECASTS (GF) describe winds and temperatures for the LOCIDs entered. You specify the altitude and number of hours into the future and receive winds and temperatures at your requested altitude plus altitudes of 4,000 feet above and 4,000 feet below the requested altitude. If this lower altitude is less than 2,500 feet above the LOCID elevation, the lower altitude report will not be voiced.

See chart, page 5.

ISSUED: Unscheduled, but typically at 0400 and 1600 GMT.

6 TWEB ROUTE FORECASTS (TR) are similar to the transcribed forecasts broadcast over VOR's. They cover weather conditions within a 50-mile wide corridor along a route, and within a 50-mile radius of a metropolitan hub.

ISSUED: Approximately 1200, 1800, and 2400 GMT. Delayed, amended, and corrected TRs are provided as needed.

HOW TO MAKE ENTRIES

Pilot entries are made using a 12-key touch-tone telephone keypad capable of producing the appropriate star (*) and sharp key (#) tones. The keypad illustration below shows some important IVRS features. Note that the letters "Q" and "Z" are mentally assigned to the No. 1 key. The star key is used to make system control entries. The sharp key is used as follows:

- Entering ## signifies the end of a pilot input.
- A Null Response ## is used to indicate that no further LOCID or TWEB route number entries are forthcoming.
- A single sharp # is used in the non-prompted mode only as a separator between components of an entry.

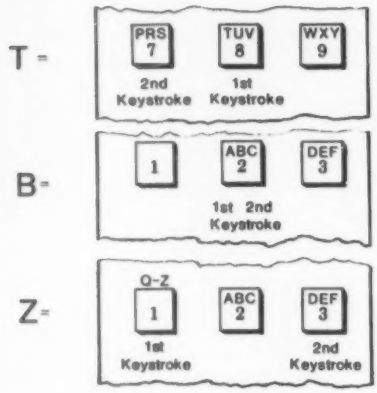
The following discussion describes how to make entries using the touch-tone telephone keypad. Underlined characters in the examples that follow and in other parts of this guide represent valid IVRS entries.

Location Identifiers

LOCIDs may consist of three letters only or three letters and numbers. Each number used in a LOCID uses a zero prefix.

EXAMPLE FOR 2: 0 2
EXAMPLE FOR 24: 0 2 0 4

Each letter used in a LOCID consists of two keystrokes per letter. The first keystroke is the letter itself. The second keystroke represents the position of the letter on the key (left, center, right). To denote the left position, press either the 1, 4, or 7; for the center position, press either the 2, 5, or 8; for the right position, press either the 3, 6, or 9. This convenience allows you to enter any letter using keys in the same row.



Using this convention, a LOCID such as 4LJ is entered as: 0 4 5 6 5 4

TWEB ROUTE NUMBERS must contain only the three digits identifying the route. (Those TWEB route numbers below 100 must include one or two leading zeros as shown in the TWEB route tables.)

EXAMPLE FOR TWEB ROUTE 077: 0 7 7

HOURS are required for Winds Aloft Forecasts only. Hours are entered using one or two keystrokes to indicate hours into the future.

EXAMPLE FOR 8 HRS: 8
FOR 24 HRS: 2 4

ALTITUDES are required for Winds Aloft Forecasts only. Altitudes use up to three keystrokes denoting altitude in hundreds of feet. This entry is valid for a range of 2,500 feet (2 5) to 50,900 feet (5 0 9).

EXAMPLE FOR 8,000: 8 0
FOR 25,000: 2 5 0

The response to system prompts requiring a **YES** answer is:

9 (Y Key)

The response to system prompts requiring a **NO** answer is:

6 (N Key)

System Control Entries

These entries allow you to interrupt voice output (pause) and redirect session flow. Two keystrokes are needed for each entry.

The first keystroke is: *

This suspends voicing for up to 30 seconds at the end of the phrase being spoken.

The second keystroke is one of the following:

- G **GO.** Resume speech.
- D **DELETE.** This function is valid only when the system is awaiting a response. In prompted mode, delete current input or previous LOCID or TWEB route number. In non-prompted mode, delete current input or input prior to last separator.
- J **JUMP.** This function is valid only when voicing a weather product. Jump to weather report for the next LOCID or TWEB or next prompt.
- R **REPEAT.** Repeat report in progress or last prompt.
- B **BEGIN.** Start session again.
- T **TERMINATE.** End the session.
- M **MODE.** Switch to other mode. System responds "Enter Request" in nonprompted mode and "Enter Location Identifier" in prompted mode.

Summary of Code Entries

CODES

Pause	*
Resume	*G
Delete	*D
Repeat	*R
Begin Over	*B
Jump	*J
Terminate	*T
Mode Change	*M

Control Function Key (Star Key)

Sharp Key (# Separator, ## Entry)

SAMPLES:

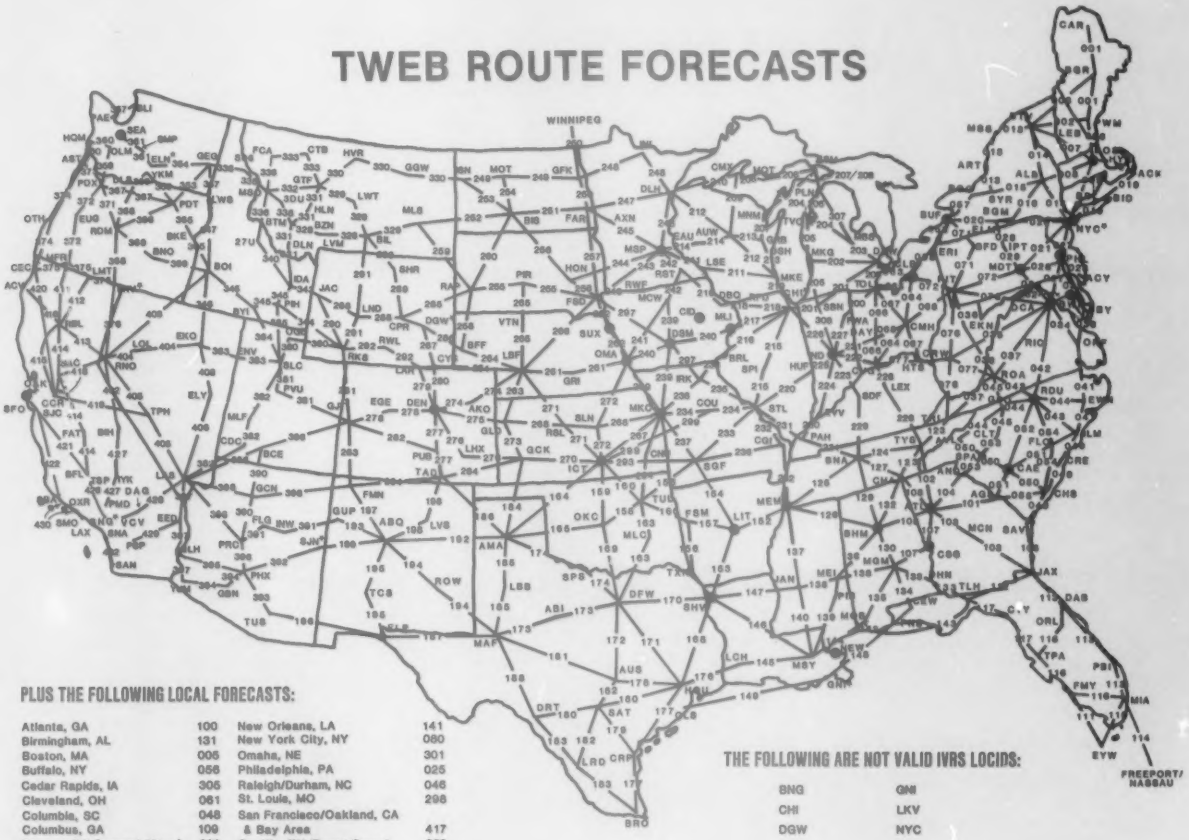
LOCID Numbers	01,02
LOCID Letters	Letter, Key Position A = 2,1
Yes	(Y)9##
No	(N)6##
TWEB	012##
LOCID	B O S 2,2 6,6 7,9##
ALT	(100 ft.) 10,000 – 100##
Hours	0 – max.

IVRS Calling Numbers

To get the latest weather information for pre-flight planning, use a Touch-Tone phone to call the IVRS exchange nearest to you:

Atlanta	(404) 876–2311	Los Angeles	(714) 670–0707
Boston	(617) 890–7475	Miami	(305) 624–0796
Chicago	(312) 767–4800	Minneapolis	(612) 936–0917
Columbus	(614) 224–6526	New Orleans	(504) 529–1365
Dallas	(214) 256–2245	Oakland	(415) 261–9733
Denver	(303) 797–3374	Philadelphia	(215) 625–0910
Detroit	(313) 358–0330	Portland, OR	(503) 242–0023
Ft. Worth	(214) 256–2245	Raleigh	(919) 832–0843
Harrisburg	(717) 232–5281	Seattle	(206) 343–9345
Houston	(713) 526–5411	St. Louis	(314) 731–8093
Islip	(516) 588–9760	Teterboro	(201) 288–4600
Kansas City, MO	(913) 321–3540	Washington, D.C.	(202) 393–1456

TWEB ROUTE FORECASTS



PLUS THE FOLLOWING LOCAL FORECASTS:

Atlanta, GA	100	New Orleans, LA	141
Birmingham, AL	131	New York City, NY	080
Boston, MA	005	Omaha, NE	301
Buffalo, NY	056	Philadelphia, PA	025
Cedar Rapids, IA	305	Raleigh/Durham, NC	046
Cleveland, OH	061	St. Louis, MO	298
Columbia, SC	048	San Francisco/Oakland, CA	
Columbus, GA	109	& Bay Area	417
Denver, CO (except Mtns.)	306	Seattle, WA/Puget Sound	356
Des Moines, IA	304	Shreveport, LA	142
Harrisburg, PA	026	Sioux City, IA	302
Indianapolis, IN	309	Southern CA Deserts	
Kansas City, MO	295	PSP–EED S.W.	429
Little Rock, AR	151	Tehachapi Mtns.	
Los Angeles, CA Basin	431	Soledad–Cajon–Banning	
Memphis, TN	126	Passes & Adjacent Mtns.	426
Minneapolis, MN	296	Washington, DC/Baltimore, MD	032
Moline, IL	303	Wichita, KS	300

THE FOLLOWING ARE NOT VALID IVRS LOCIDS:

BNG	GNI
CHI	LKV
DGW	NYC
ELN	SJK

PROMPTED MODE

In this mode, the system provides a prompt indicating the type of pilot input desired.

Sample Prompted Mode Dialogue

Assume you are planning a flight from Albuquerque to Amarillo along TWEB Route 192. Assume also that Selected Weather Warnings are in effect along the route. The actual entries you would make are underlined; system prompts and responses are enclosed in quotes; and descriptive comments are contained within parentheses. The dialogue commences after you call one of the IVRS telephone numbers.

SYSTEM: "Hello. Greenwich Time is now (current time). Enter Location Identifier."

PILOT: (Enters LOCID for Albuquerque, ABQ.) 2 1 2 2 1 1 # #

SYSTEM: "Alpha, Bravo, Quebec, Enter next location."

PILOT: (Enters LOCID for Amarillo, AMA.) 2 1 6 4 2 1 # #

SYSTEM: "Alpha, Mike, Alpha. Enter next location."

PILOT: (May enter up to eight more LOCIDs or else enter a null response.) # #

SYSTEM: "Selected Weather Warnings exist. Do you want these warnings? Answer yes or no." (The system will also notify you when Selected Weather Warnings do not exist.)

PILOT: (Enters YES.) 9 # #

SYSTEM: (Voices existing AWW(s) and then WST(s) for ABQ and AMA followed by) "Do you want Surface Observations? Answer yes or no."

PILOT: (Enters YES.) 9 # #

SYSTEM: (Voices Surface Observations for ABQ and AMA followed by) "Do you want Terminal Forecasts? Answer yes or no."

PILOT: (Enters YES.) 9 # #

SYSTEM: (Voices Terminal Forecasts for ABQ and AMA followed by) "Do you want Winds Aloft? Answer yes or no."

PILOT: (Enters YES.) 9 # #

SYSTEM: "How many hours from now? The maximum is (the system voices the maximum number of hours available)."

PILOT: (Enters a number between zero and the maximum stated by the system, e.g.) 5 # #
NOTE: (The Winds Aloft Forecasts presented represent forecast data even if you request current data, i.e., by entering zero hours from now.)

SYSTEM: (Confirms the number entered by voicing it and prompts for altitude.) "Five. At what altitude?"

PILOT: (Enters up to three digits indicating desired altitude in hundreds of feet, e.g., for 10,000 ft.) 1 0 0 # #

SYSTEM: (Confirms entry and then voices Winds Aloft Forecasts for five hours from now for ABQ and AMA at 10,000, 14,000, and 6,000 feet followed by) "Do you want TWEB Route Forecasts? Answer yes or no."

PILOT: (Enters YES.) 9 # #

SYSTEM: "Enter the TWEB route number."

PILOT: (Enters the Albuquerque-to-Amarillo TWEB route number, i.e., 192.) 1 9 2 # #

SYSTEM: (Confirms entry and then prompts for next TWEB route.) "One Niner Two. Enter next TWEB route number."

PILOT: (May enter up to nine more TWEB route numbers or else enter a null response.) # #

SYSTEM: "Selected Weather Warnings exist. Do you want these warnings? Answer yes or no."

PILOT: (Enters NO.) 6 # #

SYSTEM: (Voices the TWEB Route Forecast for route 192 and then prompts for more information.) "Do you need more information? Answer yes or no."

PILOT: (Enters NO.) 6 # #
NOTE: (A YES response at this point returns the sequence to the "Enter Location Identifier" prompt.)

SYSTEM: "Your session is being terminated. If assistance is needed, please contact a Flight Service Station."

Pilot Assistance

IVRS was installed and is maintained by IOCS which provides personnel at the central site in Waltham, MA, 24 hours a day to answer pilot questions, to explain system operation, and to respond to any system problems. Pilots are encouraged to call the toll free number 1–800–FOR–IVRS for assistance or to report any troubles with the system. (In Massachusetts call 1–800–221–5603.) Suggestions for improving the system may be made by calling the 800 toll-free number or writing to:

IOCS, Inc.
400 Totten Pond Road
Waltham, MA 02254
Attn: IVRS Operations Manager

NONPROMPTED MODE

You may wish to use the nonprompted mode, which allows you to enter strings of requests and thereby receive multiple weather products for given locations and multiple TWEB Route Forecasts without having to proceed through the entire prompted mode dialogue.

WEATHER PRODUCT CODES (WPC) are used in the nonprompted mode to signify the weather product(s) desired. Each code is entered using two keystrokes as shown below. The numbers used for each code represent the letter abbreviations shown.

Selected Weather Warnings†	7 9 (S W)
Surface Observations	7 2 (S A)
Terminal Forecasts	3 8 (F T)
Winds Aloft Forecasts	4 3 (G F)
TWEB Route Forecasts	8 7 (T R)

† Selected Weather Warnings consist of severe weather alerts and/or convective thunderstorm or similar phenomena forecasts.

There are two methods of using the nonprompted mode. You may receive a string of weather products of your choice (except TWEB Route Forecasts) for each LOCID entered. You may also receive TWEB Route Forecasts for a string of up to 10 TWEB routes. In each case, one set of inputs gives you the desired weather information.

The input format for a string of weather products is:

(LOCID) # (WPC_1) # (WPC_2) # (WPC_3) # (WPC_4) # #

The WPC for Winds Aloft Forecasts (43) must be accompanied by inputs for hours and altitude. The format for this product is:

4 3 # (HOURS) # (ALTITUDE)

The input format for a string of TWEB Route Forecasts is:

$$(TWEB_1)\,\#\,(TWEB_2)\,\#\,\ldots$$
$$(TWEB_{10})\,\#\,TR\,\#\,\#$$

Sample Nonprompted Mode Dialogue

In the following example, the pilot is requesting the same information as in the sample **prompted** mode dialogue. Note that TWEB Route Forecasts must be requested separately from other products.

SYSTEM: "Hello. Greenwich Time is now (current time). Enter Location Identifier."

PILOT: * M (This entry switches you to the nonprompted mode. You may return to the prompted mode at any subsequent point by entering * M again.)

SYSTEM: "Enter request."

PILOT: (Enters the LOCID for Albuquerque, followed by the codes for Selected Weather Warnings (79), Surface Observations (72), Terminal Forecasts (38), and Winds Aloft Forecasts (43). In actual practice, you would enter only the codes desired. The Winds Aloft Forecasts code must be followed by the number of hours from now (e.g., 5) and the altitude in hundreds of feet (e.g., 100). Each element in the string must be separated by a single sharp #.)

212211 # 79 # 72 # 38 # 43 # 5 # 100 ##

SYSTEM: (Voices the requested weather product(s) for the Albuquerque LOCID followed by) "Enter request."

PILOT: (Requests the same sequence of weather products for Amarillo.)

216421 # 79 # 72 # 38 # 43 # 5 # 100 ##

SYSTEM: (Voices requested weather products followed by) "Enter request."

PILOT: (Enters the TWEB route number (192) and the TWEB Route Forecast code (87).)
192 # 87 #
NOTE: (If more than one TWEB Route Forecast is desired, up to ten may be entered in a string, followed by the product code, e.g., 192 # 197 # 195 # 193 # 87 ##.)

SYSTEM: (Since Selected Weather Warnings exist for the requested TWEB route, the system prompts) "Selected Weather warnings exist. Do you want these warnings? Answer yes or no."

PILOT: (Enters YES.) 9 # #

SYSTEM: (Voices the Selected Weather Warnings and the TWEB Route Forecast followed by) "Enter request."

PILOT: (If the pilot wants to terminate the session, the entry would be) * T

SYSTEM: "At your request, your session is being terminated. If assistance is needed, please contact a Flight Service Station."

SPECIAL FEATURES

The examples of IVRS/pilot dialogue given previously show the sequence of entries needed to obtain the available weather products. The examples assume that all entries are made correctly, that all current weather data are available, and that the IVRS vocabulary can cover every situation that may arise. To cover the situations that will occur in actual practice, IVRS incorporates special messages, error protection features, and time limitations.

Messages

Product Not Available Messages are voiced when a particular weather product is not available. For example,

"SURFACE OBSERVATIONS FOR ALPHA BRAVO QUEBEC NOT AVAILABLE."

"CURRENT SURFACE OBSERVATION FOR ALPHA BRAVO QUEBEC IS NOT AVAILABLE. THE LATEST AVAILABLE OBSERVATION IS" ..... (followed by the most recent reports up to three hours old).

"TWEB ROUTE ONE-ZERO-ZERO NOT AVAILABLE."

Product Exists But Cannot Be Voiced Messages are given when Selected Weather Warnings or Surface Observations cannot be voiced due to processing difficulties. For example,

"A SEVERE WEATHER FORECAST ALERT EXISTS BUT CANNOT BE VOICED."

"A CONVECTIVE SIGMET EXISTS FOR THE EAST REGION BUT CANNOT BE VOICED."

"A CONVECTIVE SIGMET EXISTS FOR NEBRASKA AND KANSAS BUT CANNOT BE VOICED."

"REMARKS EXIST WHICH CANNOT BE VOICED."

Error Protection Features

IVRS software contains features intended to reduce errors, including:

- Echoing of data entries to ensure that they are made correctly and used properly.
- Notification of input errors.
- Validation of LOCID, TWEB route number, and terminal forecast location entries against current lists of valid locations.

Echoing of Data Entries

The system voicing of the data helps you to verify that you made the proper input. If what is voiced is not what you intended, you must first delete your entry, using the delete function (* D), and then reenter your request to receive the intended information.

Input Errors

If an input is not in the correct format or is not the proper response to the prompt or within the expected range, the system voices "INVALID ENTRY. REENTER." Your session will be terminated if you make five consecutive input errors or 15 total input errors during your session.

Validation of Entries

Requests for locations, routes, or terminal forecast locations that are not current IVRS weather reporting stations will result in one of the following:

"ALPHA BRAVO CHARLIE IS NOT A VALID LOCATION. REENTER."

"NINER FIVE NINER IS NOT A VALID TWEB ROUTE NUMBER. REENTER."

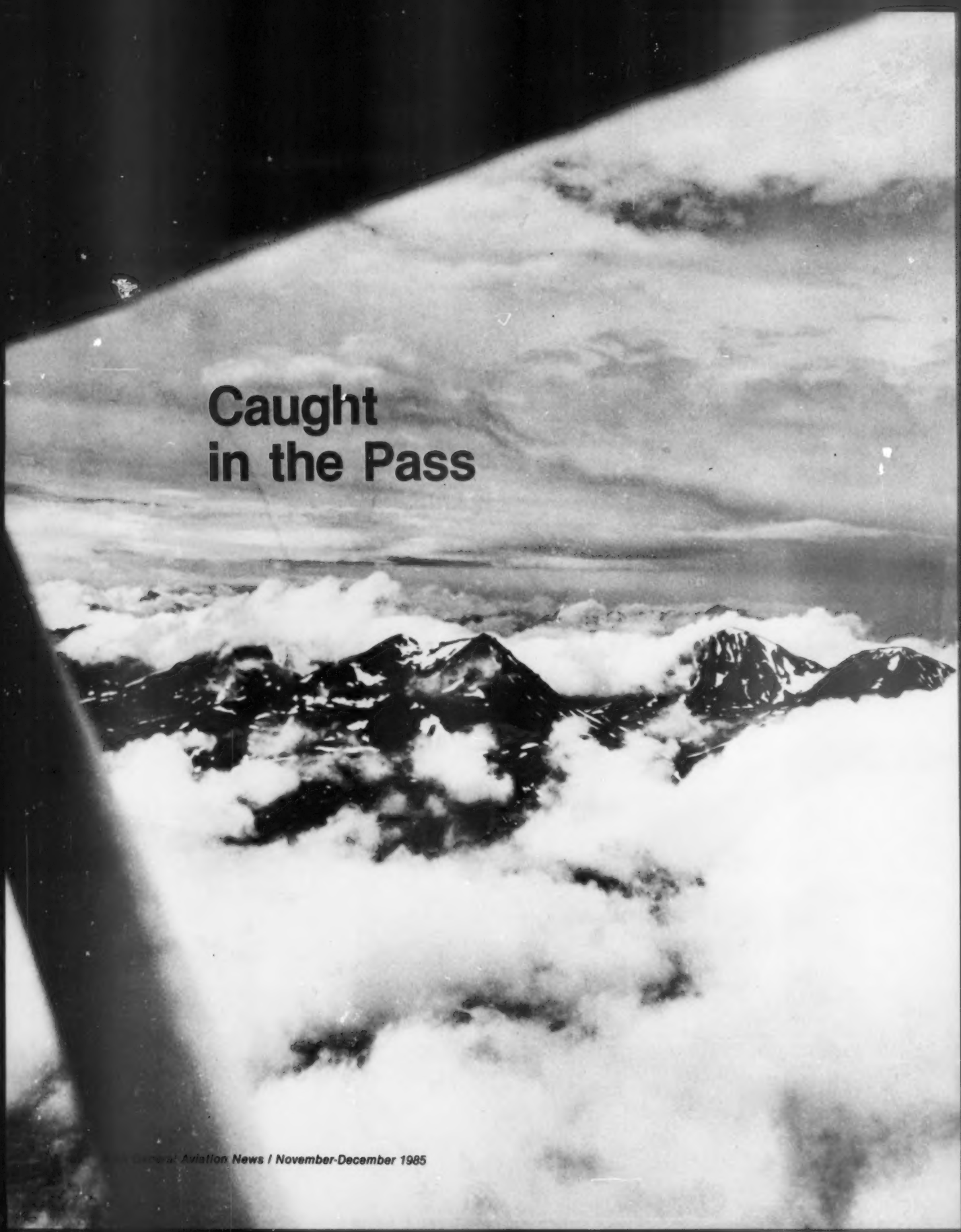
"ALPHA LIMA NOVEMBER IS NOT A VALID TERMINAL FORECAST LOCATION. REENTER."

Time Limitations

In order to make IVRS service available to as many pilots as possible and provide each pilot the opportunity to obtain the maximum information, the following time limitations are incorporated. Exceeding these time limits results in session termination.

Session time is limited to 15 minutes.

Response time is limited as follows. If you exceed 30 seconds in responding to a prompt in the prompted mode or inputting a separator or other entry in the nonprompted mode, you are prompted to "PLEASE CONTINUE INPUT." Any key strokes made while the system is voicing the prompt "PLEASE CONTINUE INPUT," are disregarded by the system. If there is no response for 60 additional seconds, the session is terminated.



Caught in the Pass

"Guestimating" Cloud Tops is a Risky Business

A VFR-only pilot with considerable mountain flying experience (mostly in the Colorado Rockies) planned to fly from Blake Airport near Montrose to Durango, CO, about 100 miles to the south. The massive San Juan Range, with peaks over 14,000 feet, lay directly in his path, so he elected to dogleg around to the west via the Uncompahgre Plateau. He would navigate to the plateau by following a state highway over an 8,000-foot pass. His personal account of the flight, originally published by the Nebraska Department of Aeronautics, points up one of the little understood hazards of mountain flying in cloudy weather.

On this particular day, me and my trusty Cessna 170 were to meet friends in Durango and then proceed on to Casa Grande, AZ for a midwinter fly-in. The country in western Colorado is quite variable—valleys, canyons, primitive areas, towering mountains—you have to know where the passes are.

A call to the weather people didn't show much to worry about—8,000 feet scattered at Farmington, about 100 miles to the south. There was nothing too bad in the forecasts either, only light snow showers over and near the mountains. My takeoff and climb to 11,000 were uneventful but cold. Outside air temperatures dropped almost out of sight.

As I neared the approach to Uncompahgre Plateau, the air became rough, very rough, but a little of that isn't always bad—you know, keeps you on your toes. The scattered clouds became a little closer together and maybe a touch more ragged. Visibility was variable but not less than four or five miles. Up above, the sun was trying very hard to shine through, but the cloud layer over the 8,000 foot pass to the south looked pretty solid.

I decided I had best climb above the clouds instead of scooting under them in the pass. I had plenty of airspace to turn in and began to do so slowly. The tops couldn't be far, I thought; and, as every pilot knows, you can always turn around, right?

During the climb it became much colder. Frost on the windshield was now a problem. No matter that the clouds below and behind were a bit tighter. The sun wasn't far away now; the top was almost here. In all my years of experience I hadn't learned one thing that I know now: *You cannot judge the height of clouds* nor the density of same not even when you are right beside them. I thought I was climbing out of trouble, but at 14,500, it looked just like it had at 12,000—in other words, not good. I knew then that I'd already gone too far in that little 170.

A very slow, shallow one-eighty turn was made. The reverse course was corrected to allow for the wind that I knew was pushing me toward the peaks that guarded the pass. Below, well, it wasn't good—no sign of anything but wisps of off-white. The sun above seemed to be mocking my presence.

After 20 minutes on what I hoped was the reverse course—with the radio virtually useless because of the tall peaks and ground references hopelessly obscured—things changed, for the worse. It was darker now. Torn chunks of clouds began to grasp at the wing tips. I knew that to proceed was sheer suicide because I was obviously off course. There were mountains everywhere ahead and to my right—if, in fact, I had not already drifted over them. Fuel? That was half gone now. Radio? No way! I couldn't even get a weather report, since by then I was too far away from an omni. Yes, I know radio range in the mountains is very limited, but you never really know what that means 'til you need it.

I was at the limits of my service ceiling, so continuing to climb to get out of this mess was not possible. I had to go down before the clouds closed all the way in and swallowed me up. Down to what, I could not even guess, but I made up my mind that it was now or never. I only hoped that I would have some small chance. Not straight into a mountain, please . . . just a chance. I pulled carb heat and throttled the engine back, but not too far back. I didn't want to lose the engine heat.

Remote communication outlets (unmanned radio facilities that relay radio communications to FSS's) provide communications coverage over most of the country's remote areas (January/February 1983 FAA GENERAL AVIATION NEWS, "Long Distance Radio Reception"). Pilots transmitting in these remote areas should be aware of the facilities and frequencies available to maintain radio contact throughout the flight.

FAA weather briefers should provide information on cloud tops, including PIREP's, if they are pertinent to your flight. If the information is not volunteered, request cloud top reports or forecast cloud tops from the briefer.

A memory of stories of graveyard spirals floated through my mind. Very slowly I set up a fairly tight but shallow descent. My eyes strained at everything yet nothing at the same time. At 12,000 feet, I knew there could be trouble: two peaks that I was sure were near me, Lone Cone and Little Cone, reached 12,600 feet. The altimeter unwound and so did my nerves. Was I descending into a canyon? Who knew? Pull up? Even if I pulled up for the ridge I thought was there, it might really be those nearby peaks.

My hands were sweating in spite of the intense cold. My teeth chattered but I don't think that was from being chilly. I cannot describe the things that went through my mind as that altimeter unwound to 8,500 feet and still nothing but dirty gray. Let it be quick, I thought. I was sure it was all over but the crash.

Then, suddenly at 8,300, a change. A few shadows . . . I didn't believe my eyes—trees, and snow . . . yeah, it was snow. Was the ground fairly flat, or vertical? I couldn't tell, but I started to level a bit and apply a little power, and with that the engine sputtered, coughed, caught again. Not that too! The carb heat was still on, then the engine caught again. I was not a scant 150 feet above the trees. Some careful moves with the throttle now. The engine rpm began to increase then broke into full power.

I leveled off. The trees . . . those trees . . . they were Juniper trees! There were none of them in the high country. I knew I must be below the plateau. I flew along, just off the deck. I could see a mile, then two miles, then I took a good look down. I knew this canyon; shape and direction matched my recollection. I knew where I was! I set a course for home.

Another few miles, and it was clearer up ahead. Gradually I broke free of the mist and came again to the valley I had left what seemed like years ago. A few more excited minutes and there was Blake Field. It never looked so good.

What did I learn? Well, for one thing, like I said before, you can't estimate cloud tops on your own. I'll know what to ask for next time. Also, that old one-eighty turn, but you know that one. Maybe, just maybe, that turn should be done a little more often and sooner . . . like right over the airport or even better in the driveway at home if there aren't any current PIREP's. Oh, yes, one more thing. There are fair weather pilots (that's me) and there are instrument pilots. There is no, I repeat, NO in between. ■

Rotorwash and White-out

Avoiding an "Inside the Eggshell" Environment

Good advice on cold weather flying is pretty easy to come by as regards airplanes, but relatively little has been published about rotorcraft operations in severe wintry conditions. In general the helicopter pilot is concerned about the same problems that other airmen face in winter: icing in clouds at lower altitudes, snow showers that obliterate visibility, difficult start-ups without preheat, battery care, lubrication changeover, etc. There is one threat, however, that is unique to helicopters, and that is *rotor-induced white-out.*

White-out is a loss of visual reference brought about by natural conditions, such as blowing snow—or by a ground cover of snow obliterating details of the landscape, or by the glare of light or snow. But a white-out can also be created by a helicopter operation close to the surface when dry, powdery snow is present in sufficient quantity. The whirling rotor blades can set up such a tight circulation of snow around the helicopter that zero-zero conditions prevail.

This in turn can produce *spatial disorientation.* The victim has a sensation of moving in a given direction when in fact the aircraft has stopped or is moving in quite a different direction. Without adequate visual cues, the unsuspecting pilot could apply wrong flight control inputs, leading either to loss of control or an inadvertent ground impact, or rotor blades may strike trees or other nearby objects, perhaps with serious consequences. White-outs are the most prominent cause of cold weather accidents in helicopters, and most of these accidents are preventable.

The first step in white-out prevention is to study the procedural guidelines for snow operations provided by the manufacturer for each

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specific make and model of helicopter. Also of interest are the recommendations developed by the Department of Defense's Directorate of Aerospace Safety for helicopter operations in remote, snow-covered areas, many of which have obvious civilian application.

Foremost among these recommendations is the maxim, "Know the snow before you go!" Powdered snow, beloved of skiers, is the stuff that traps 'copter pilots in an opaque whirlwind. If there are six inches or more of loose, dry snow on the ground, a takeoff should be made only when absolutely necessary and then only with extreme caution.

Bear in mind that the recommended procedures have been developed for military pilots who are IFR-rated and fly rotorcraft that are fully instrumented—which may not be true of many civilian 'copters and pilots.

TAXIING

When a departure from snow is scheduled, a takeoff site should be selected where the snow has been dispersed, or packed down hard. For taxiing to the site, rotorcraft on wheels have a distinct advantage, since they can usually move over the ground with a minimum pitch setting that does not stir up a snow cloud. For taxiing on skids (except on smooth ice) a much higher pitch setting is needed and there is danger of blanketing the aircraft in snow en route. Air-taxiing may be preferred, since at airspeeds of 10 to 15 knots the rotorwash should give you an area of forward visibility despite any snow cloud that develops.

TAKEOFF

If there are obstacles to flight or rising terrain nearby, the takeoff from snow should involve a near vertical ascent, without hovering, using a continuous application of torque (not to exceed limitations) and maintaining a positive rate of climb. The aircraft should have no forward movement until well clear of the surface.

Initially during the climb expect an increase in blowing snow and a loss of ground reference. Be prepared to maintain heading and attitude by reference to flight instruments. When clear of the snow cloud, adjust flight attitude and torque to achieve normal climb speed and rate of climb. Avoid hovering—this could stir up more snow. Since blowing snow can cause a flame-out in turbine engines, anticipate a possible need to enter autorotation. The presence of a co-pilot who can monitor engine and transmission instruments will add greatly to the safety of this operation.

LANDING

Prior to the approach, ascertain snow conditions on the ground by radio if possible. If not, perform a low pass (300 to 400' AGL) for snow surveillance—do not hover for site inspection. Suspect loose snow if the outside air temperature is near 0°F and there is no indication of glare ice or recent snow melt. Footprints are an important clue: the shallower the impressions, the less likely you are to encounter deep powder. A landing on loose snow deeper than six inches is certain to stir up a snow storm; land elsewhere if at all possible.

Appearances can be deceiving, so if there is any doubt in your mind, carry out a landing maneuver suited to loose snow. Although the specific technique will vary for each type of helicopter, and for the specific conditions encountered, the basic principle is the same: *keep the aircraft in front of the whirling snow until after touchdown.*

If the landing site is improved and there are no unknown obstructions, a running landing is the best procedure for minimizing blowing snow. However, if the site is remote or unfamiliar, forward speed should be dissipated directly upon touchdown. Approach with only the minimum power required to terminate and dissipate forward speed directly upon touching down.

If there are no obstacles along the approach path, a shallow approach is recommended. If a steeper-than-normal angle of approach is necessary, it is preferable to terminate the approach out of ground effect and descend vertically to the surface. The looser and more abundant the snow, the slower your descent rate should be, so that your rotors push away the snow cloud and allow you to see the ground. (If you lose ground reference be prepared to go immediately on instruments and climb out—do not attempt a landing, or a hover, which will intensify the snow cloud.)

The primary difference in the procedure for landing on loose snow takes place in the final 50 feet. Instead of making the normal deceleration below effective translational lift airspeed, you must maintain this airspeed until just before touchdown. This enables you to keep the helicopter in front of the snow stirred up by the rotor blades.

As the aircraft descends to ground effect altitude, blowing snow will develop to the rear of the fuselage. At this point, deceleration should be initiated immediately and a landing attitude assumed. Once contact with the landing gear is made, reduce power until the aircraft is firmly on the ground.

Landing accidents account for most of the self-induced helicopter white-out accidents and usually the probable cause determined by Safety Board investigators is "Selected unsuitable terrain." A common mistake made by pilots who are not snow savvy, when they find themselves caught in a blinding snow cloud near the ground, is to stop forward motion and lower the collective. This lowers the aircraft to the invisible ground in a manner apt to result in a damaging impact, unless the snow cover happens to be especially deep and soft and even.

A Hughes 269C pilot suffered this kind of mishap recently while hunting coyotes from the air in western Wyoming. The area where he elected to land to pick up the dead animals had a six-inch fresh snowfall on top of a four-foot snow crust. Just before touchdown the pilot, not instrument rated, experienced a complete white-out. In an effort-regain visibility he lowered the collective. Almost immediately the skids broke through the snow crust, the rotor blades contacted the ground and the helicopter turned over. No injuries, but substantial damage.

Note: white-out can also occur when the snow is soft and wet, or compact, when there is an indefinite horizon and poor terrain differentiation. The pilot of a Bell 206 was preparing to land on an island near Homer, AK on a warm (47°F) April afternoon when he experienced this phenomenon. Homer radio reported a 3,500 foot broken ceiling with rain showers in the area. At the intended landing site the sky was described as overcast, with "flat light" over a barren, snow-covered landscape.

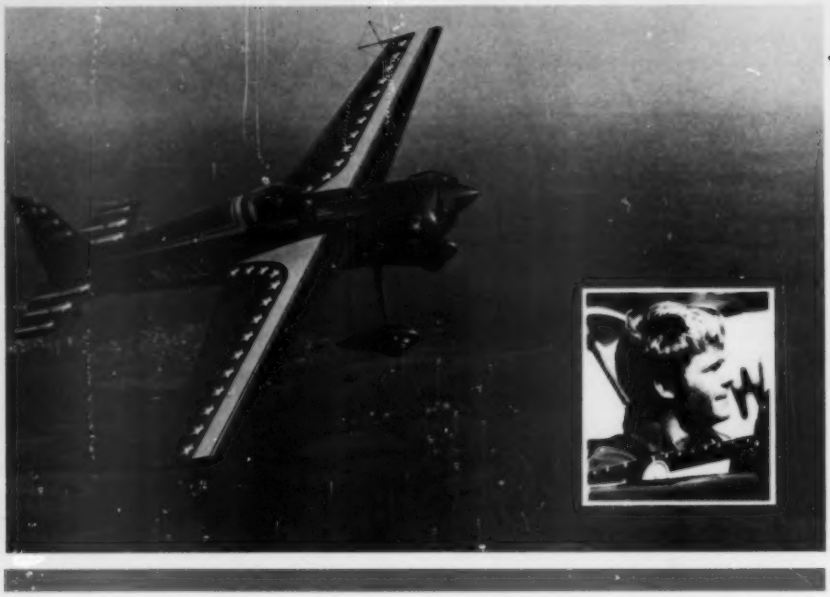
The pilot stated that he had begun to hover near his landing stake when he encountered what he described as a white-out—"like being on the inside of an eggshell." He was unable to judge his height above the surface. He lost sight of his marker stake when he turned his head to look inside the cabin and unknowingly allowed the helicopter to drift to one side toward a rock outcrop, where contact was made with the rotor blades. The aircraft pitched over on the right side, but the pilot shut down the engine quickly and there was no fire or serious injury. The pilot, incidentally, was not instrument rated.

The expanding use of helicopters for winter operations in snow country, such as search and rescue, medical evacuation, remote site skiing, avalanche survey, cattle feeding, etc., is increasing helicopter exposure to conditions that could create an instant rotor-induced IFR environment—no warning. Instrument training, in addition to time spent flying with experienced bush and mountain helicopter pilots, could prove to be a lifesaver. ■

SNOW VERTIGO

Snow clouds—rotor induced or otherwise originated—are potentially capable of bringing about pilot incapacitation from flicker vertigo. Rotor blade movements, in the presence of landing lights or other illumination reflected by snow, have caused pilots to become dizzy to the point of losing consciousness, according to reports in the Air Force publication, *TAC Attack*. Another compelling reason for avoiding whiteouts, especially when alone at the controls.

(Editor's Note: The procedures discussed in this article are based on material in the U.S. Army's "Flightfa: and on discussions with veteran helicopter pilots.)



Leo Loudenslager

An International Aerobatic Champion

Aerobatics has been defined as "an aerial ballet of planned maneuvers involving unusual changes in an aircraft's attitude, altitude, or speed . . . sometimes subjecting the occupant to a force equal to six or more times the pressure of gravity." Airplanes can be built to tolerate such pressure, but why would any sane human being deliberately stress his or her body to seemingly unbearable limits?

The history of aerobatics goes back to the earliest days of flying, when aviators were still discovering what this new winged toy was capable of doing. By the end of World War I, air circuses became a great American institution. Legions of former military pilots were ready to do anything to stay in aviation and if it meant doing daredevil stunts—so be it.

The five original basic maneuvers—vertical and inverted flights, slow and snap rolls and stalls as well as the death-defying last-second pull-up—eventually evolved into a complicated and exacting science, as well as a sport of international standing.

As part of an effort to shake off the barnstorming image, the International Aerobatic Club (IAC) was formed in 1970. The purpose of this club was to foster aerobatic aircraft construction and to organize formal gradations of competitive precision flying into a sport.

In organized competition pilots were required to perform a pre-established set of maneuvers and then execute an additional "freestyle" set of their own choosing. A uniform code identified the maneuvers, with fixed point ratings assigned according to their difficulty.

Over the next 15 years aerobatic flyers changed their image from daredevils to safety conscious pilots, and decreased their accident rate impressively. Another major safety accomplishment of this group was to introducing an intermediate class, as a transition between sportsman and advanced—filling in the no-man's land between amateur and expert.

Beyond the Advanced class there is the "Unlimited" category which involves a difficulty factor so great that most of the planes used have been modified or specially designed to withstand the demands put upon them. The best U.S. pilots in this class usually became a part of this country's Aerobatic Team, participating in the contest for the world title. As to the question, *why do they do it?* Pilots might echo the mountain climber's reply: "Because it's a challenge."

Take Leo Loudenslager as an example. He is a 41 year-old American Airlines First Officer with over 10,000 hours. The impression he gives is a man in tight control, light on his feet and not very talkative; quite different from the old-time outgoing, gregarious barnstorming stunt flyer. He is a strict disciplinarian about his own habits and tries to maintain his weight at exactly 160 pounds. Aerobatics to Leo means the ultimate degree of controlled personality—everything has to be subordinated to the perfection of the manuever. Fellow competitors will tell you, "Few of us expect Leo to lose control for even the blink of an eye."

Loudenslager was born in 1944 and grew up in Columbus, OH, where his father, an industrial engineer, encouraged his son's interest in flying. By the time he was 19 he had his pilot's license and was building time toward an ATP and an airline career.

Later Leo would move eastward, eventually settling in Sussex in upstate New Jersey, where he still lives with his family. He enjoys the low hills and flat valleys where the "furrows are arrow straight"—ideal terrain for practicing the intricate and dangerous maneuvers of aerobatics. Also it is not too far away from the flight ramp at La Guardia where he plies his regular trade.

In 1971 Loudenslager allowed his fascination with stunt flying to lead him into acquiring an ancient *Stephens Akro*. After that he was hooked, and went into competition.

While most aerobatic pilots prefer the biplane, Leo favored the sleek monoplane. He also wanted a high power to weight ratio, and to that end he modified his his *Akro* into a unique design called the *Laser* 200. Weighing about 850 pounds, it has a mahogany veneer wing construction with Dacron cloth over wire ribs, and a trussed steel tube fuselage. A 200 hp Lycoming piston engine supplies the power. The airfoil is Leo's own design, and the airframe is "wrapped around" the pilot uniquely. Leo designed and built his own plane because ". . . no text book tells an aerobatic pilot how to build a plane for unlimited maneuvers in competition."

Once he got the feel of this sport and starting winning meets, there was no holding him back. Before long he was referred to as "the winningest aerobatic pilot in aviation."

In less than a decade he won seven U.S. National Championships. He was also a five-time winner of the Harold Kreir Award of the Aerobatic Club of America, and the first aviator ever to win the coveted Victor Award for his "Contribution to Sports."

But by far the most memorable event to Leo was the Tenth World Aerobatics Championship. With ten countries competing, it was held in August 1980 at Wittman Field in Oshkosh, WI. The United States had never won big in this competition, and often there had been bad feelings about of objectivity of Soviet bloc judges. At Oshkosh, however, radar was used for the first time to track the flight paths of competing planes, and to determine whether any pilots strayed outside of the designated aerial arena.

Going outside the boundaries would be considered an "out" and points would be deducted from the final score; going below 50 meters AGL meant disqualification. With radar there was no longer any room for guesswork or politics in the judging.

At the end of the 1980 international championships, Leo felt that he had performed so badly that he might as well just pack up and fly back to Sussex then and there. The posted

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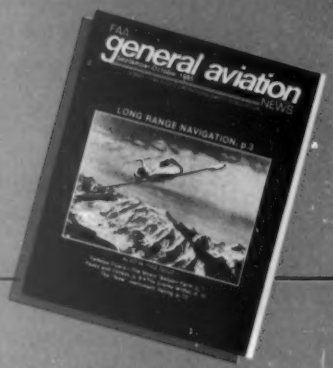

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Preflight Planning

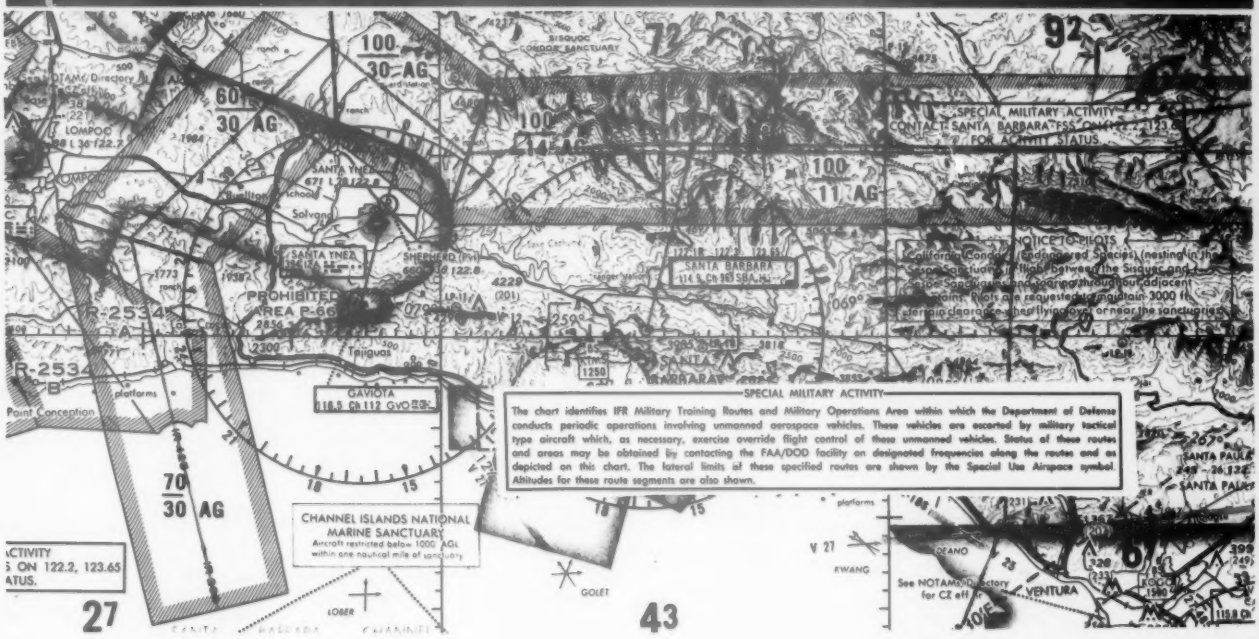
CUSTOMS—**Airports of Entry.** Current Customs procedures ... 5–6/83
FIRE—**Firing Up the Engine.** Engine fire at start up ... 3–4/83
FROST—**Frost-free Aircraft—The 60% Solution.** Frozen dew and deicing ... 1–2/85
FUEL—**Fuel Tanks as Water Traps.** Bladder-type fuel tank problems . 3–4/84
FUEL—**Winter Fuel Problems.** Water contaminated fuel ... 1–2/83
FUELING—**Static Sparks.** Static electricity dangers during fueling 1–2/84
ICING—**Ground Icing.** Use of anti- and de-icing solutions ... 1–2/83
IVRS—**Nationwide Weather Data at your Fingertips.** Interim voice response system now covers 48 states ... 11–12/85
MILITARY—**Occupied Air.** Keeping clear of military aircraft ... 1–2/83
NORTH ATLANTIC—**Hopping Over the Pond.** Flying over the North Atlantic to Europe ... 5–6/83
PROPELLERS—**Alternatives to Handpropping.** What to do when the battery is low ... 3–4/84
SURVIVAL—**Survival Procedures for Non-pilots** ... 1–2/85
TAKEOFF—**Calculating the Slope.** Minimum takeoff distance for unpaved runways ... 9–10/84
TIRES—**Hot Landings and Cold Nights.** Tire inspection ... 3–4/83

Weather

CLOUDS—**Caught in the Pass.** "Guestimating" cloud tops ... 11–12/85
FROST—**Frost-Free Aircraft—The 60% Solution.** Frozen dew and deicing ... 1–2/85
ICING—**Ground Icing.** Use of anti- and de-icing solutions ... 1–2/83
ICING—**Icicle Weather.** Inflight icing 11–12/83
IVRS—**Nationwide Weather Data at your Fingertips.** Interim voice response system ... 11–12/85
SNOW—**Winter Landings at Night.** Snow covered runways ... 1–2/84
WINDSHEAR—**Microbursts and Macrowinds.** New data on windshear cause and effect ... 11–12/83
WINTER—**Rotorwash and White-out.** Winter helicopter operations 11–12/85
WINTER—**At Home in the Snow.** Surviving winter accidents ... 11–12/83
WINTER—**Late Winter Landings.** Spring thaw and runways ... 3–4/85
WINTER—**Winter Flying: Good News and Bad.** Tips on cold weather flying ... 11–12/84

UNMANNED AEROSPACE VEHICLES

Newcomers on Military Training Routes


100
30 AG
60
30 AG
100
11 AG
92
SPECIAL MILITARY ACTIVITY
CONTACT SANTA BARBARA FSS
FOR ACTIVITY STATUS
NOTICE TO PILOTS
SANTA YNEZ
PROHIBITED AREA P-66
R-2534 A
R-2534 B
Point Conception
platforms
GAVIOTA
70
30 AG
CHANNEL ISLANDS NATIONAL MARINE SANCTUARY
Aircraft restricted below 1000 AGL within one nautical mile of sanctuary
SPECIAL MILITARY ACTIVITY
The chart identifies IFR Military Training Routes and Military Operations Areas within which the Department of Defense conducts periodic operations involving unmanned aerospace vehicles. These vehicles are escorted by military tactical type aircraft which, as necessary, exercise override flight control of these unmanned vehicles. Status of these routes and areas may be obtained by contacting the FAA/DOD facility on designated frequencies along the routes and as depicted on this chart. The lateral limits of these specified routes are shown by the Special Use Airspace symbol. Altitudes for these route segments are also shown.
SANTA BARBARA
SANTA PAULA
VENTURA
platforms
27
43

Currently the Department of Defense is using Military Training Routes (MTR's), Restricted Areas, and Military Operations Areas (MOA's) in the southwest, southeast, and in the Caribbean for practice flights of unmanned aerospace vehicles. The width and path of these special corridors are clearly shown with gray hashmarks on sectional charts; the floor (AGL) and ceiling (MSL) are given numerically for each segment.

The unmanned aerospace vehicles are approximately 20 feet in length and jet-propelled. They can achieve high subsonic speeds in flight and their entire course, which can cover 800 miles, is preprogrammed. They are accompanied at the same altitude by two military airplanes equipped with electronic guidance systems for maintaining the intended course. If necessary, the unmanned vehicle can be diverted aloft and parachuted to earth. A third chase plane at 10,000 feet MSL provides surveillance. Managers of airports located near an active route are notified in advance.

UAV's are obtain only on IR military training routes under air traffic control in VFR conditions only, and in daylight. The IR's used for UAV flights are called *unmanned aerospace vehicle routes* and are established by letter of agreement with FAA. Currently, there are three such route complexes: an East Coast Complex from Elgin AFB, near Pensacola, FL, to Monroeville, LA; a West Coast Complex through California, Nevada, and Utah; and Overwater Routes near San Juan, PR. Clearly displayed are the frequencies (usually a nearby FSS or military base approach control) to call to obtain information on planned activity along the routes. If unable to obtain this information for any reason, assume it is hot and fly under the floor or over the ceiling. On sectional charts, the margin has a boxed item explaining the "Special Military Activity" conducted on these routes.

Routes for unmanned aerospace vehicles are not shown when they enter a Restricted Area or a MOA. However, the MOA will display a "Special Military Activity" box with the appropriate radio frequency for providing activity status. Restricted Areas, of course, require prior authorization for entry.

UAVR's are depicted only on *current* sectional charts so far, and only on the ones encompassing the three routes.

90 --- Ceiling of MTR in hundreds of feet MSL

20 AG --- Floor of MTR in hundreds of feet AGL

CHARTS SHOWING UAV ROUTES

ROUTE	SECTIONAL
East Coast Route	New Orleans
West Coast Route	Los Angeles Las Vegas San Francisco
Overwater Route	Puerto Rico/Virgin Islands

Unmanned aerospace vehicle operations are conducted to assure the security of our nation. By learning when the routes will be in use, you can stay out of harm's way with little inconvenience—and complete safety. ■

(Detailed information on MTR's and special use airspace can be found in the Airman's Information Manual *and the January/February 1983 issue of* FAA GENERAL AVIATION NEWS, *"Occupied Air." Another useful publication is Advisory Circular 210-5A, "Military Flying Activities," free from DOT Subsequent Distribution Unit, M-494.3, Washington, D.C. 20591.)*

Leesburg Automated FSS

Modernized Flight Service Station Sets up Shop in Virginia

FAA has taken another step forward in its program to automate the collection and distribution of flight service information with the opening of the consolidated Leesburg, VA, AFSS, or automated flight service station. Area pilots have been sent full particulars via direct mail, but pilots from other parts of the country who will be flying into the nation's capital area will be interested in the time-saving aspects of the new facility.

Located at Leesburg/Arthur Godfrey Airport, about 35 miles west of Washington, DC, the new AFSS serves the District, Maryland, Delaware and central Virginia (except for the areas still served by Newport News, Roanoke, Danville, and Salisbury FSS's). The latter three individual flight service stations are slated for consolidation with Leesburg during the next three years.

The Leesburg AFSS is open 24 hours a day and offers in-person briefing as well as service via radio and telephone. Recorded weather is available only between the hours of 5:00 a.m. and 10:00 p.m. At present the principal change in services that pilots will experience (in comparison with non-consolidated stations) is the saving in time for telephone flight plan filing and for weather briefing, when a taped summary statement of weather conditions is appropriate. Airmen who telephone Leesburg AFSS using touch tone type equipment will have the option of talking to a live briefer or listening directly to a recorded summary of the current weather and flight conditions within the area served by Leesburg AFSS.

These taped recordings, like the live briefings, are up-dated at least every hour. In addition to observations and forecasts, the automated information includes a synopsis of weather systems, known icing conditions, winds aloft, PIREPs when available, flight precautions, and recent NOTAMs. More detailed information, such as elevation of cloud tops, military training route activity, etc., may only be obtained "live" from a briefer.

Section 91.5 of the Federal Aviation Regulations, which requires pilots to obtain an adequate preflight briefing before taking off for flight beyond the immediate vicinity of an airport, *may or may not* be satisfied by means of the automated message, depending upon weather conditions and the qualification of the pilot and aircraft. If conditions appear marginal, based on the recorded information, a pilot should seek additional information by talking directly to an FSS specialist or other approved source.

Pilots who use the recorded Fast File service for their flight plan filing can select the "menu" number which handles flight plans for departures scheduled within the hour (401) or the menu which only accepts later departure times (402).

The means by which pilots utilize touch tone telephones to acquire recorded information is much simpler than many previous systems. The system is essentially numerical, and the only numbers the pilot will be dealing with are printed in large type on a wallet-size card (available free from the AFSS). Pilots can use one of several published toll-free numbers. In addition, there is an 800 number for pilots outside the local telephone service area.

Your call will be answered by a taped greeting (all voiced responses are human voices on tape, not synthesized voices): "WELCOME TO

Wallet cards containing the menu of automated services and key telepone numbers are available free from the Leesburg Flight Service Station, P.O. Box 2188, Godfrey Municipal Airport, Leesburg, VA 22075; (703) 777–1832.

LEESBURG AFSS SERVICES

TOLL-FREE NUMBERS

FROM:	
Baltimore	706–8603
Washington, D.C.	347–7090
Leesburg	777–2856
Elsewhere	1–800–WX BRIEF

LEESBURG AUTOMATED INFORMATION MENUS

Information	*Touch tone code*
MAIN MENU	200
RECORDED WEATHER FOR:	
DCA/BWI	301
NORTHBOUND WEATHER	302
SOUTHBOUND WEATHER	303
CENTRAL VA WEATHER	304
BALLOON/SOARING OUTLOOK	305
SPECIAL EVENTS	320
FLIGHT PLANS 1 HOUR OR LESS FROM ETD + CANCEL VFR	401
FLIGHT PLANS 1 HOUR + ETD	402

Pilots interested only in local weather conditions in Virginia may call directly for the following Automated Weather Observations:

Hot Springs	(703) 839–5974
Lynchburg	(804) 237–3208
Martinsville	(703) 357–3784
Shenandoah	(703) 234–9345
Winchester	(703) 662–6970
Wise	(703) 728–3727

THE LEESBURG AUTOMATED FLIGHT SERVICE STATION. TO OBTAIN THE MENU OF SERVICES, ROTARY AND PULSE USERS REMAIN ON THE LINE FOR ASSISTANCE. TOUCH TONE USERS DEPRESS 200 AFTER THE TONE IS HEARD."

The pilot signifies that he understands by tapping the 200 number. (If he only taps the #* keys, he will be routed to the next available briefer.)

In response to the 200 code the pilot will be informed by taped message that the "menu" consists of several 300 code numbers for recorded weather and two 400 numbers for automated flight plan filing. Selection is made by tapping #* plus the code. If you fail to understand some part of the message, or wish it repeated, you have only to hit #* and the 200 code. If information concerning an alternate route on the menu is desired, you tap #* plus the selector number of that item on the menu. (Between May 1 and October 30, a soaring/balloon outlook can be accessed on weekends by entering #* 305.)

If you are departing within the hour, tap #* 401 to fast file your flight plan—or #* 402 for a later departure. The selector number #* 401 can also be used to change or cancel a flight plan without having to wait for a live briefer. If further discussion with a live briefer is desired, simply tap #* and wait for the next available specialist to come on the line. The "conservation" is terminated simply by hanging up the phone. You can say "Goodbye" if you wish.

Flight Service Stations have come a long way from the original chain of 17 "airway radio stations" strung out along the 2,665 mile "Transcontinental Airway" from coast to coast in 1920. Most of these early stations were remotely located and manned by a single individual, whose duty started at 4:30 a.m. and lasted as late as need required, seven days a week. Communication was by radio telegraph—plus whatever ingenius modifications could be devised by the operator, who also observed cloud ceilings, temperature, visibility, windspeed and direction and field conditions and made up his own forecasts.

The "weather map" so produced consisted of a narrow strip of geography leading from one station to the next, with very little known about adjacent storm systems. After landing the pilots would exchange weather information with the operators and compare notes as to what lay ahead.

By 8:30 in the morning the station operator would usually have completed all his calls and gotten his pilot off the ground, shooing stray cattle off the airstrip when necessary, helping sort and stow the mail and seeing to supplies. He was then free until about 4:30 in the afternoon, when he stood a second four hour shift, servicing the arriving daylight flight, and the departing night flight. If a landing in darkness or poor visibility was anticipated he prepared to light the airfield with the best means at hand—automobile headlights, oil drums, flares, etc. Snow drifts often had to be cleared from the runway and runway edges frequently needed delineation in the form of lighted markers. If field conditions were too poor for a safe landing, the station operator had to warn the pilot, using pre-arranged field or hand signals. Many long and lonely hours of the night were spent sitting around waiting anxiously for the husky roar of a Liberty engine . . . that sometimes never came.

Many of the airway keeper stations west of Omaha were located in desolate wilderness country or on high mountain passes accessible only by mule train. Bitter Creek and Cherokee in Wyoming, Locomotive Springs in Utah, Beowawe and Buffalo Valley in Nevada, and Donner Summit in California were typical station sites. At Donner Summit (altitude 7,100 feet) the tower and radio shack had to be anchored to solid rock in order to keep them from being blown away by fierce winds of the high Sierras; often the station keepers were snowbound for months.

Maintaining a remote station called for a high degree of ingenuity, a tolerance for isolation—and at times the agility of a mountain goat. Skis, sleds, and snowshoes were standard operating equipment during the long winter seasons. Shelter consisted of a prefabricated wooden hut, drab and drafty and furnished strictly for utility, housing one to four men at a maximum annual outlay of about $12,000—which included salaries and supplies. A good huntsman was always a welcome addition to the complement.

Lighting the airway and extending the radio capability had a favorable effect on flight safety from the very beginning. The 1919 fatality ratio of one pilot killed for every 114,324 miles of airmail flight was reduced to one fatality per 2.5 *million* miles by 1926.

In 1938 the airway radio station was redesignated as "airway communication station," under the newly created Civil Aeronautics Administration of the Department of Commerce. By this time, thanks to air-to-ground radio capability, station operators could actively participate in the control of a flight in progress, giving the latest weather reports and helping lost pilots identify local landmarks and find their bearings.

By the 1970's the network of flight service stations covering the nation had grown to 340, but the buildup in air traffic and the complexity of air routes had increased to the point where some pilots were experiencing serious delays in contacting FSS briefers. Careful studies indicated to FAA that the rising demand for flight services could only be met by modernizing the system; and by turning to the new methods of automatically collecting, organizing and disseminating information made possible by computers.

After considerable research on the part of industry and FAA, a prototype hub, consolidating Washington National, Richmond, and Charlottesville (VA) flight service stations, was established at Leesburg. (Other prototypes were set up at Indianapolis and Atlanta.) A decade of experience with the new technology, while servicing pilots based as far as 200 miles from the hub, has led the agency to design a new national network of 61 consolidated FSS's which will meet the expanding needs of general and commercial aviation for the foreseeable future.

The automated system for flight plan filing and receiving weather summaries at Leesburg, inaugurated on August 25, is a small but important step ahead. The new service coincided with moving the physical plant to the airport, where it is open for pilot visits. A good place to take a peak at the future. ■

INFLIGHT RADIO FREQUENCIES FOR LEESBURG FSS

Baltimore Area:	122.2
	122.1R/Baltimore VOR
	122.1R/Westminster VOR
Washington Area:	122.2
	122.6
	122.1R/Brooke VOR
	122.1R/Armel VOR
	122.1R/Casanova VOR
	122.1R/Nottingham VOR
Richmond Area:	122.2
	122.4
	122.1R/Richmond VOR
	122.1R/Flat Rock VOR
Southern VA:	122.1R/Lawrenceville VOR
Shenandoah Valley:	122.1R/Montebello VOR
	122.1R/Shawnee VOR
Charlottesville Area:	122.2
	122.65
	122.1R/Gordonsville VOR
Martinsburg:	122.1R/MRB VOR
	122.1R/HGR VOR
	122.1R/Frederick VOR
Flight Watch:	122.0

HELICOPTER VORTICES. The FAA Technical Center in Atlantic City, NJ has begun investigating helicopter wake vortices and their effect on other aircraft. Sikorsky S-76 helicopter (above) was fitted with smoke generators to mark the vortices at various speeds. The study will help establish separation standards at airports with rotary- and fixed-wing traffic.

RULEMAKING PROPOSED ON UPGRADING RADAR TRANSPONDERS

FAA is proposing that radar transponders installed in aircraft after January 1, 1992, be models incorporating the "selective address" or Mode S technology. This new radar beacon technology gives more accurate aircraft position information to controllers and enables automatic and continously updated weather information to be transmitted to the pilot.

The current ground-based equipment interrogates simultaneously all aircraft in the area with operating transponders. This can cause garbling and overlapping of signals and, therefore, inaccuracies. Mode S uses a discrete or selective address that queries only selected airborne receivers. (See the September/October 1981 FAA GENERAL AVIATION NEWS for a detailed explanation.)

If the rule were adopted, pilots could continue to use previously installed Mode C transponders indefinitely until the unit needed replacing. FAA believes enactment of the rule now would encourage pilots and owners to install Mode S equipment early. The first Mode S ground-based equipment will be in place in 1987, with 137 more installations on order. Transponders are required when operating in designated terminal control areas or above 12,500' MSL.

Comments should be sent in duplicate to FAA's Office of the Chief Counsel, AGC-204, Docket No. 23799, 800 Independence Ave., S.W., Washington, D.C. 20591. The deadline is December 16, 1985.

LANDING SYSTEM OF THE FUTURE IN USE AT RICHMOND

The first federally furnished, public use *microwave landing system* (MLS) in the United States is now operating at Richard E. Byrd Field in Richmond, VA. Twenty area general aviation aircraft are being provided MLS receivers under an agreement with FAA that will provide regular feedback on its operation over the three-year evaluation period. To install a MLS receiver, supplemental type certification is required.

The microwave landing system at Richmond is the first of 1,250 units scheduled for nationwide installation. The familiar UHF/VHF instrument landing system (ILS) will continue to be available until at least the end of this century. MLS is expected to be standardized worldwide by the year 2000, according to FAA Administrator Donald D. Engen.

Like ILS, MLS ground transmitters send signals to airborne receivers which display asimuth, elevation, and range information. The MLS signal wavelength is 50 times shorter than the VHF/UHF spectrum used by ILS and is subject to less interference than ILS. MLS also allows multiple approach paths (rather than one for ILS) at varying degrees of slope. The ground units are quicker to install and easier to maintain than ILS, and the ground equipment itself is less expensive.

There will be a few differences in the cockpit for the pilot accustomed to tuning in a single localizer frequency. For the MLS approach the azimuth and the glidepath angle (obtained from the approach plate or automatically provided by a datalink) must be selected, as well as, in some cases, a separate frequency for DME information. At Richmond radar vectors to the course are provided. Panel instruments are almost identical to those for ILS.

NEW AIRCREW REST RULES

Effective this past October 1, flight crews for major airlines, commuters, and on-demand air taxis have new flight time requirements that assure adequate rest periods. Regulations that had been in effect for over 30 years have been altered.

Pilots operating under FAR Part 91 are not affected. However, general aviation pilots could benefit from similar self-imposed limitations.

Commuter pilots now have an eight-hour scheduled flight time limit between required rest periods for all crews. Prior to the change, two-person crews could fly 10 hours (eight hours for one-person flights) during any 24 consecutive hours. The new rule also establishes long-term limits for commuter pilots for the first time: 34 hours in any consecutive seven days; 120 hours a month; and 1,200 hours a year.

On-demand air taxi pilots still have an eight-hour limit for one person flights and a 10-hour limit for two-person flights. The long-term limitations are 500 hours in a three-month period, 800 hours in six months, and 1,400 hours a year.

Airline and commuter pilots who are scheduled to fly eight or fewer hours in a 24-hour period must have a nine-hour rest period. Between eight and nine hours of flight time requires 10-hour rest, and an 11-hour rest when flight time exceeds nine hours.

NEAR MIDAIRS ON RISE

Preliminary figures for the first seven months of 1985 indicate that reports of general aviation near mid-air collisions (NMAC) increased from 313 for the same period in 1984 to 439. The increase is believed due to more pilots becoming aware of and using NMAC reporting procedures, rather than to an actual increase in incidents. Airline NMAC's remained the same.

To bring about a down trend in near misses, FAA has announced a program to emphasize fundamental airmanship skills (including collision avoidance and scanning) and has begun installing additional collision alert warning systems at 120 airports. The new Airport Radar Service Area concept at major terminals is also expected to reduce the midair collision threat.

LATEST AIRMAN PUBLICATIONS

Engineering Representatives

AC 183.29.1T provides an updated list of "Designated Engineering Representatives," individuals with FAA privileges to approve engineering or flight test information. Available from U.S. Government Printing Office, Superintendent of Documents, Washington, D.C., 20402. Check price before ordering.

• Proper Endorsements

I would like clarification on the following: Student X soloed on February 16, 1985, continued to train, and received an endorsement to fly solo cross-country. Only one dual flight was taken between April 1 and June 16. On June 16 the student had a dual session, and the instructor noted in the logbook that ground reference maneuvers, minimum control airspeed, and landings were accomplished.

1. Does this endorsement constitute the 90-day review required in FAR Part 61?

2. When the student arrives to fly solo, how does the dispatcher or the chief flight instructor know that the 90-day review was completed satisfactorily?

Please advise the proper endorsement for this student which would assure correct CFI supervision required by the NTSB.

Chester J. Hoffman
Cahokia, IL

Unless the flight instructor specified in the endorsement that he or she found the student competent for solo flight, the June 16 sign-off could not be considered a 90-day review endorsement.

A dispatcher or chief flight instructor would determine the student's status by examining the logbook for the proper endorsement. If any required endorsement for solo were not satisfactory, the student would have to fly with an appropriately rated instructor.

Guidance for proper endorsements, including necessary elements and suggested language, can be found in Advisory Circular 61-65A, "Certification: Pilots and Flight Instructors;" free from DOT's Subsequent Distribution Unit, M-494.3, Washington, D.C., 20590.

FAA supervises certification of pilots, including flight instructors. The National Transportation Safety Board's functions are primarily to investigate accidents and recommend safety procedures.

• Heavy Metal

In reference to Mr. Eric Barlich's request in the Flight Forum (July/August 1985) concerning a trade journal for heavy iron mechanics, he is partly correct.

I have edited a trade journal for aircraft maintenance technicians for over 15 years now, and I have tried many times to include articles on large aircraft. These efforts have generally been less than successful because no one seems eager to write the articles. (Our articles are written by actual technicians.)

If anyone has any suggestions, I'm willing to listen and would provide the coverage.

Dale Hurst
Riverton, WY

Mr. Hurst can be reached by writing to International Aviation Mechanics Journal, P.O. Box 36, 1000 College View Drive, Riverton, WY 82501-0036

• Interrupted Training

Are student pilot training hours good indefinitely? I stopped flying in 1981 with 33 hours logged. Can those hours be applied to my total time after four years?

Howard A. Rader, Jr.
Bridgeton, MO

Affirmative. However, you might find that after four years, additional recurrent instruction will be needed to bring your skills up to par for certification as a private pilot.

• Gearing up for Canada

Congratulations on a fine article "Alaska - Overland or Over the Sea." (July/August 1985) Only one minor point: Pilots will find a complete list of required survival gear in AIP Canada, *Section RAC 2.7.5 Keep up the good work!*

Norm Packham
Transport Canada
Ottawa

Thanks to our friends in the Great White North. Response has been so quick to that article and its reprint, that we are already out of stock. If your local FAA office has no more, take heart, we will be reissuing the reprint shortly.

• Which Approach Plate?

The article in your July/August 1985 issue on "Instrument Approach Problems - Common Procedural Errors that Lead to Tragedy" is timely and appropriate. However, I am concerned with what appears to be an error. The text reads: ". . . the approach plate procedure required that the aircraft remain at an altitude of 3,500 feet until 4.2 miles out from the localizer/DME at which point descent was authorized to a minimum descent altitude of 2,760 feet MSL." The approach plate provided as an illustration to the article, the Spokane VORTAC ILS approach to runway 03, shows neither the 3,500 foot altitude minimum nor the step-down fix at 4.2 DME. Is it possible that you used the wrong plate? This would be particularly ironic in an article designed to increase pilot awareness of the need for caution, vigilance, and precise adherence to procedure.

W. G. Schenk, III
Charlottesville, VA

The approach plate used as an illustration was the current plate at the time of publication, not the one in effect when the referenced accident took place. Since the accident, changes have been made in the approach, and we did not want to publish a years-old approach plate that could inadvertently have been used.

• Military Addendum

Reference the July/August 1985 "Flight Forum" article, "Multiengine Restricted," I believe you might have left something out. I think it should read:

". . . other evidence to show that they have had an official military *checkout or have had at least 10 hours . . ."*

Ronald J. Swierski
San Antonio, TX

Including that might have made it clearer. To us the checkout was implied, since otherwise the pilot would not be able to log time as PIC.

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFO-810, Washington, D.C. 20591.

• Important Customs

Your article "Alaska - Over Land or Over the Sea" was very well-written and complete. However, the article states: "On exiting Canada, customs clearance is not required for private aircraft." While it is not necessary to clear Canadian customs outbound, pilots returning to the U.S. from Canada may find themselves in serious trouble wth U.S. Customs and other Federal officials if they do not clear *U.S.* Customs at their first point of landing in the U.S.

Name withheld

Right you are, and thanks for reminding us.

• Flight Plans Above 14,500'

I was told at a Flight Instructors' Clinic that a flight plan is required in the Continental Control Area anytime you are above 14,500' MSL. Is this correct? If so, by what regulation?

Glen R. Rosford
Bellevue, WA

Negative. There is no requirement for a flight plan in the Continental Control Area above 14,500' MSL—*unless* you are above 18,000' MSL and in a Positive Control Area

FAA would be interested in knowing what flight instructor clinic told you that.

Instrument Corner

• Control Zones Again

I would like a clarification on an item in your article "XYZ's of CZ's in the January/February 1985 issue. On pages 8 and 9, Situation III states that ". . . cloud ceiling altitude as determined by official observer applies to all airports in the control zone." However, Situation IV states that when "landing at or departing from any airport where there is no currently functioning control tower or official weather observer . . . pilots may determine whether the ceiling is at least 1,000 ft. . . . "

If a pilot departs from a secondary airport without an official weather observer, but the primary airport within the control zone has an official weather observer, does the primary airport ceiling hold (Situation III) or is the pilot responsible for determining the ceiling (Situation IV)? There seems to be a contradiction.

Also, is it true that if there is no official weather observer anywhere in the control zone, the control zone is not in effect?

Michael J. Vranjkovic
Duluth, MN

On the illustration portion of pp. 8 and 9, the caption should have read" . . . no currently functioning control tower or official weather observer *in the zone.*"

Negative on your second question. Control zones are established by regulation, and the absence of an observer does not mean they are no longer in effect.

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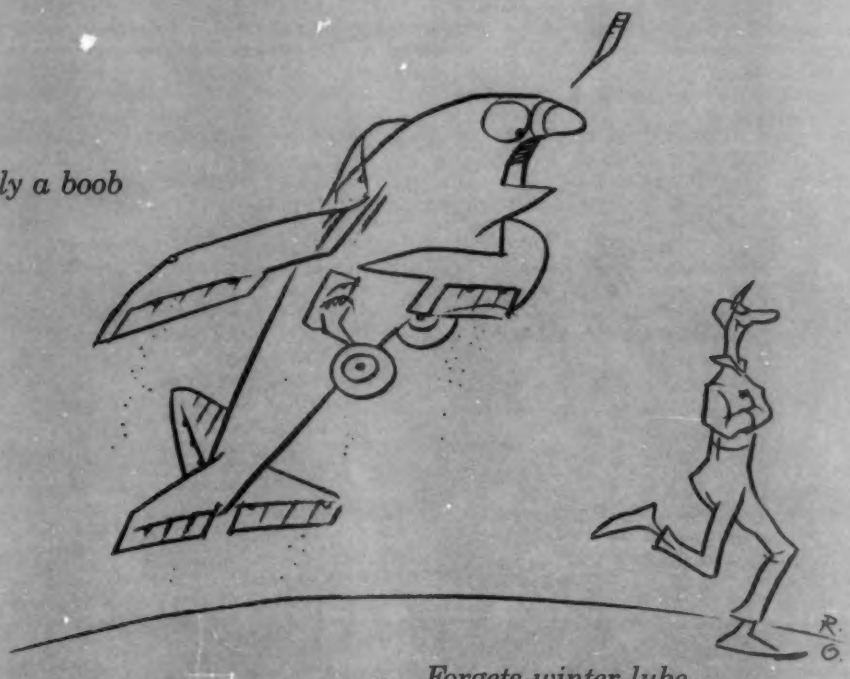
Famous Flyer *(continued from p. 12)*

results, however, nearly put him in shock. He had won the gold medal.

In fact, the U.S. team of five men and three women had dominated the meet, the men taking 1st, 2nd, 3rd, 5th and 6th places and women all the first three honors. The only sour note was the absence of the strong Russian and Czechoslovakian teams, which abstained for political reasons.

Leo led the U.S. Team to the next International meet in 1982, but experienced engine trouble and failed to place. After that Leo switched from amateur ranks to professional stunt flying and now spends his free weekends on the contemporary barnstorming circuit, enjoying himself while pleasing paying customers with breathtaking maneuvers.

To Loudenslager, aerobatics is flying the airplane to all its limits. But he is not so intolerant of human error as some people believe, and even though he has never had an accident, he admits, "I always keep a 30% safety margin in my hip pocket."

A pretty good philosophy for all pilots. ■